

**INNOVATIVE ECONOMY
KEY TERMS AND DEFINITIONS IN THE SPHERE OF
INNOVATION**

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The article presents a systematized review of the main terminological and conceptual apparatus used in domestic and foreign statistical practice in the study of phenomena and processes in the field of innovation. The differences in the interpretations of the above terms and definitions, which are available in Russian sources and the Oslo Guide, are indicated.

In article the systematized review of the basic terminological and conceptual device used in domestic and foreign statistical practice at studying of the phenomena and processes in the field of innovations is submitted. Differences in treatments of the given terms and the definitions, available in the Russian sources and the Oslo Manual are designated.

It is generally recognized and does not need additional justification for the assertion that there is no alternative for Russia to an innovative way of development.

At the same time, in various circles of Russian society, in our opinion, there is a certain misunderstanding of the essence of phenomena and processes in this area, largely due to insufficient knowledge of the terminological and conceptual apparatus.

The presented material contains an overview of the main terms and definitions in the field of innovation, which are given in the interpretation of domestic sources (regulatory and methodological documents, scientific literature) and the "Oslo Guidelines" (Proposed Guidelines for Collecting and Interpreting Technological Innovation Data: Oslo Manual. Paris: OECD, Eurostat, 1997). The Oslo Handbook is a valid methodological document prepared by the Organization for Economic Co-operation and Development (OECD) jointly with Eurostat and provides guidance on innovation statistics that are recognized as international statistical standards. For ease of perception, terms and definitions are not in alphabetical order,

1. The concepts of innovation and innovation.
2. Kinds and types of innovations.
3. Measuring innovation activity.
4. The cost of innovation.
5. Goals and effectiveness of innovation.
6. Diffusion of innovation.
7. General (external to organizations) conditions for innovation.

Innovation (innovation) - the end result of innovation, embodied in the form of a new or improved product introduced on the market, a new or improved technological process used in practice or in a new approach to social services. (Statistics of Science and Innovation: A Brief Terminological Dictionary. M.: TsISN, 1998.) clear quality advantages when used in the design, production, marketing, consumption and disposal of products, providing additional economic (cost savings or additional profit) and / or social benefit in comparison with the previous product or organizational-economic form. (Appendix to the draft "Fundamentals of the policy of the Russian Federation in the development of the national innovation system for the period up to 2010 and beyond.")

Innovation (innovation) - the end result of innovation, which has received implementation in the form of a new or improved product sold on the market, a new or improved technological process used in practice. (Concept of the innovation policy of the Russian Federation for 1998-2000, approved by the Decree of the Government of the Russian Federation of July 24, 1998 No. 832.)

Innovations - a complex and diversified activity with many interacting components. Determining the composition of an innovation is complicated by the fact that most products and, of course, the processes that create them are complex systems. Innovation defines changes in the properties and performance characteristics of the product as a whole, and changes in the components of the product that increase its effectiveness, including the nature of the services it provides. Innovation is at the heart of economic progress. According to I. Schumpeter, "radical" innovations determine the appearance of major changes in the world, while "incremental" innovations fill the process of changes continuously. Schumpeter has proposed a list of the different types of innovation (see R. Nelson and S. Winter (1982). An Evolutionary Theory of Economic Change. Belknap Press of Harvard University Press.

- introduction of a new product or a qualitative change in an existing product;
- process innovation new to the industry;
- opening of a new market;

- development of new sources of supply of raw materials or other investments
- changes in the business organization.

The Oslo Guide deals only with “technological” innovations, which require objective improvements in product performance.

The minimum condition for accounting as innovation is that the product or process must be new (or significantly improved) to the firm (it does not have to be new to the whole world)

A comment. In domestic practice, innovation is considered as the end result (or simply the result) of innovative activity (see the list of results of innovative activity below), in foreign practice ("Oslo Guide") - as an activity, a process of change. In our opinion, the following definition can be proposed: innovation (innovation) is the result of innovation, embodied in the form of a new or improved product introduced on the market, a new or improved technological process used in practice, or a new or improved organizational and economic form, providing the necessary economic and (or) social benefit.

Innovative activity - the type of activity associated with the transformation of ideas (usually the results of research and development or other scientific and technological achievements) and a new or improved product introduced on the market into a new or improved technological process used in practice, or a new approach to social services. Innovation activity involves a complex of scientific, technological, organizational, financial and commercial activities, and it is in their totality that they lead to innovation. (Statistics of Science and Innovation: A Brief Terminological Dictionary. M.: TsISN, 1998.

Innovative activity - type of activity for the reproduction of search, fundamental (necessary part) and applied research, design and development work, marketing actions in order to involve their results in civil law circulation for implementation in the form of an innovative product. This is a single, within the public and private sector, an integrated scientific and technological, organizational, financial, investment, production and marketing process through which ideas and technologies are transformed into technologically innovative products (services) and processes (new production methods) that have commercial value (commercial demand and commercial use in the market), as well as in new directions of using existing innovative products and services, in the formation of innovative markets.

Innovation activities include:

- performing research, development or technological work to create an innovative product;

- complex scientific and technological, indicative planning and target programming, organization and regulatory support of work on the creation of an innovative product;
- technological re-equipment and preparation of production for the release of an innovative product (service), technology;
- testing and mastering the innovative product by the consumer;
- technology commercialization process management;
- activities to promote an innovative product to the domestic and world markets, including legal protection of the results of intellectual activity used in the product;
- creation and development of innovation infrastructure;
- transfer or acquisition of rights by the Russian Federation or other rightholders to objects of intellectual property, including their involvement in civil law circulation;
- expertise, consulting, information, legal and other services (including the organization of financing for innovative activities) for the creation and implementation of a new and improved innovative product.

(Appendix to the draft "Fundamentals of the policy of the Russian Federation in the development of the national innovation system for the period up to 2010 and beyond.")

Innovative activity - a process aimed at the implementation of the results of completed research and development or other scientific and technical achievements into a new or improved product sold on the market, into a new or improved technological process used in practice, as well as related additional research and development ... (Concept of the innovation policy of the Russian Federation for 1998-2000, approved by the Decree of the Government of the Russian Federation of July 24, 1998 No. 832.)

Innovative activity - performance of work and (or) provision of services for the creation, development in production and (or) practical application of new or improved products, new or improved technological process. (Federal Law "On Innovation Activity and on State Innovation Policy" adopted by the State Duma on December 1, 1999, approved by the Federation Council on December 23, 1999 and rejected by the President of the Russian Federation on January 3, 2000)

CCI(technological product or process - ed.) innovation activity is an activity that encompasses all those scientific, technological, organizational, financial and commercial activities, including investments in new knowledge, which, in fact or by design, lead to the emergence of technologically new or improved

products or processes. Some may be completely innovative, others may not be new but necessary to implement.

Innovation is a complex process, and the scale of the activities required to bring about innovation in a firm can vary considerably. For example, the internal development of a radically different and complex electronic product for the mass market will involve many more steps than implementing an improved process resulting from the technology contained in a preprogrammed machine purchased for this purpose.

Innovative activities can be carried out within the firm or include the acquisition of goods, services or knowledge from external sources, including consulting services. Thus, a firm can acquire external technologies in an immaterial or materialized form.

Innovative activity is carried out in all sectors of the economy: manufacturing, services, government, healthcare and even private households. The concept of innovation is still not defined in some sectors of the economy, especially in those that are not market. also - "Types of innovation" - in the section - "Costs of innovation"

A comment. In the interpretation of the appendix to the project "Fundamentals of the policy of the Russian Federation in the development of the national innovation system for the period up to 2010 and beyond", innovation activity is reduced to the reproduction of research and development (R&D) (in order to involve their results in civil law circulation for implementation in the form of an innovative product), as well as marketing actions, which is only part of the innovative activity. Also, in our opinion, it is rather controversial to refer to innovation activity as "management (emphasized by us - V.V.) the processes of technology commercialization" and "creation and development (highlighted by us - 8.V.) Innovation infrastructure", since these actions are only create external conditions for innovation. The definition given in the short terminological dictionary of the CISN is more correct. However, in our opinion, it also needs clarification. Therefore, innovative activity is a set of scientific, technological, organizational, financial and commercial activities aimed at creating and introducing a new or improved product on the market, creating a new or improved technological process used in practice, or a new or improved organizational and economic form, providing the necessary economic and (or) social benefit

Types and types of innovations

Technological innovation - activities related to both the development and implementation of innovations. In particular, in the industry, technologically new products and processes, as well as significant technological improvements

in products and processes; in service industries - technologically new or significantly improved services and new or significantly improved methods of production (transfer) of services.

The types of activities that are not technological innovations not directly related to the introduction of new or significantly improved services or methods of their production or transfer, namely:

- organizational and managerial changes, including the transition to advanced management methods, the introduction of significantly changed organizational structures, the implementation of new or significantly changed directions in the economic strategy of the enterprise;
- implementation of quality standards.

In industry, the following changes are not classified as technological innovations:

- aesthetic changes in products (in color, decor, etc.);
- minor technical or external changes

in the product, leaving its design unchanged, not having a sufficiently noticeable effect on the parameters, properties, cost of a particular product, as well as the materials and components included in it;

- expansion of the product range by entering

in the production of products that were not previously produced by this organization, but already well-known in the sales market for types of products (possibly non-core) in order to ensure the momentary demand and income of the organization. For example, the production by a machine-building plant in the summer of non-core products that are in seasonal demand - nails.

(Instructions for filling out the federal state statistical observation form No. 4-innovation "Information on the innovative activity of the organization", approved by the decree of the State Statistics Committee of Russia dated July 22, 2002 No. 156.)

Technological product and process (CCI) innovations

covers implemented technologically new products and processes and significant technological improvements to products and processes. CCI innovation is accomplished if it is introduced on the market (product innovation) or used in the production process (process innovation). CCI innovations arise from a combination of scientific, technological, organizational, financial and commercial activities.

Innovation can be carried out within the framework of both the main and secondary production activities of the firm. Technological innovation can take place both in the production process and / or products of a firm, and in ancillary

activities carried out by its supply, commercial, accounting, computer or service departments. In practice, it will be very difficult to identify product innovation in ancillary services.

Technological innovation requires an objective improvement in the functionality of a product or the way it is delivered.

Other non-innovation product and process changes include:

- changes that are minor, unimportant, or not sufficiently novel;
- changes that result in “other creative enhancements” in which novelty does not extend to the use of objective functional characteristics of products and their methods of production or delivery, but rather affects their aesthetic or other subjective properties;
- the termination of the use of the process or the supply of the product to the market (the termination of an action is not a CCI innovation, although it can increase the efficiency of the firm);
- simple replacement or expansion of capital;
- changes caused solely by changes in factor prices;
- production according to individual orders;
- seasonal and other cyclical changes;

product differentiation

Product innovation - development and implementation of technologically new and technologically advanced products. (Instructions for filling out the federal state statistical observation form No. 4-innovation "Information on the innovative activity of the organization", approved by the decree of the State Statistics Committee of Russia dated July 22, 2002 No. 156.)

Technological product innovation Is the manufacture / commercialization of a product with improved performance characteristics in order to provide objectively new or improved services to the consumer. Technological product innovation can take two main forms:

- technologically new products, technologically improved products Technologically new product - a product whose technological characteristics (functional features, design, additional operations, as well as the composition of the materials and components used) or the intended use are fundamentally new or significantly differ from similar, previously produced products. Such innovations can be based on fundamentally new technologies, or on a combination of existing technologies in new use, or on the use of research and development results. (Instructions for filling out the federal state statistical observation form No. 4-innovation "Information on the innovative activity of the organization", approved by the decree of the State Statistics Committee of Russia dated July

22, 2002 No. 156.)

Technologically new product - a product that significantly differs from previously manufactured products in terms of its technological characteristics or intended use. In innovations of this kind, radically new technologies can be used, they can be based on a combination of existing technologies in a new application, or obtained as a result of the use of new knowledge.

Technologically advanced product Is an existing product for which quality characteristics are improved, the economic efficiency of production is increased by using more highly efficient components or materials, partial changes in one or more technical subsystems (for complex products). (Instructions for filling out the federal state statistical observation form No. 4-innovation "Information on the organization's innovative activities", approved by the decree of the State Statistics Committee of the Russian Federation No. 156 dated July 22, 2002.)

Technologically advanced product - an existing product whose performance has been significantly supplemented or updated. A simple product can be improved (in the direction of improving performance or reducing cost) through the use of more efficient components or materials; a complex product consisting of a number of integrated technical subsystems can be improved by making partial changes to one of the subsystems

Process innovation - development and implementation of technologically new or technologically significantly improved production methods, including methods of transferring products. Innovations of this kind can be based on the use of new production equipment, new methods of organizing the production process or their combination, as well as on the use of research and development results. Such innovations are usually aimed at improving the efficiency of production or transfer of products already existing at the enterprise, but can also be intended for the production and supply of technologically new or improved products that cannot be produced or supplied using conventional production methods.

Service is considered a technological innovation when its characteristics or methods of use are either fundamentally new or significantly (qualitatively) improved in technological terms. The use of significantly improved methods of production or transfer of services is also a technological innovation. The latter can cover changes in equipment or production organization associated with the production or transfer of new or significantly improved services that cannot be produced or transferred using existing production methods, or with an increase in the efficiency of production or transfer of existing services. Introduction of

new or significantly improved services, methods of their production (transfer) can be carried out on the basis of fundamentally new technologies or new combinations of existing technologies or on the basis of new knowledge. In this case, technologies can be embodied in new or improved machines, equipment, software, and new knowledge is the result of research, acquisition or use of special qualifications or skills. (Instructions for filling out the federal state statistical observation form No. 4-innovation "Information on the innovative activity of the organization", approved by the decree of the State Statistics Committee of Russia dated July 22, 2002 No. 156.) acquisition or use of special qualifications or skills. (Instructions for filling out the federal state statistical observation form No. 4-innovation "Information on the innovative activity of the organization", approved by the decree of the State Statistics Committee of Russia dated July 22, 2002 No. 156.) acquisition or use of special qualifications or skills. (Instructions for filling out the federal state statistical observation form No. 4-innovation "Information on the innovative activity of the organization", approved by the decree of the State Statistics Committee of Russia dated July 22, 2002 No. 156.)

Organizational innovation (organizational and management changes) - a type of innovation that is not related to technological innovation and innovations carried out within their framework in the organization of production processes or marketing research related to the development and implementation of technological innovations. Organizational and managerial changes (organizational innovations) can occur in the following areas:

- development and implementation of a new or significantly changed corporate (shareholder) strategy in an organization (group of organizations);
 - the introduction of modern (based on information technologies) methods of managing an organization (meaning technologies using modern computer technology and special software for solving, for example, problems of accounting and warehouse accounting, personnel accounting and other types of resources, planning the needs of the organization, analyzing financial the state of the organization and support for making management decisions, automated document management systems of the organization, information and reference systems for accounting for customers, contractors, clients, etc.);
 - development and implementation of new or significantly changed organizational structures in the organization;
 - innovations in the use of shift working hours;
- application of modern quality control systems, certification of products (services), including use Technological process innovation- mastering technologically new or significantly improved production methods, including methods

of product delivery. These methods may include changes to equipment or manufacturing, or both; they can be the result of the use of new knowledge. Such methods are usually aimed at the production or supply of technologically new or improved products that cannot be produced or supplied using existing production methods, or at a significant increase in production, or at the efficiency of supply of existing products.

In some service industries, the distinction between process and product may not be clear. For example, a process change in the telecommunications industry aimed at introducing an intelligent grid makes it possible to market a series of new products such as call waiting or call display.

In service industries, technological process innovation includes improved capabilities embodied in organizations and day-to-day practices when the result is a tangible change in product output.

Towards non-technological innovation includes all types of innovation that are not related to technological innovation. This means that it includes all of the firm's innovative activities that do not relate to the introduction of technologically new or significantly improved products or services, or to the application of technologically new or significantly changed processes. The main types of non-technological innovation are organizational and managerial innovation. In its purest form, these innovations are excluded from technology innovation surveys. These types of innovations are included in innovation surveys only if they arise from a technology innovation project. Based on the experience of a 1994 Australian Bureau of Statistics survey,

- introduction of improved management technologies;
- presentation of significantly changed organizational structures;
- Introduction of new or significantly changed strategic corporate directions.

Organizational innovation in the firm includes:

- introduction of significantly changed organizational structures;
- implementation of progressive management methods;
- Implementation of new or significantly changed corporate strategy orientations.

Measuring innovation activity

Innovative activity of the organization evaluated by three main characteristics:

- the presence of completed innovations;
- the degree of participation of the organization in the development of these innovations;

- identifying the main reasons why innovation was not carried out.

(Instructions for filling out the federal state statistical observation form No. 4-innovation "Information on the innovative activity of the organization", approved by the decree of the State Statistics Committee of Russia dated July 22, 2002 No. 156.)

For a certain period, the CCI **innovative activity of the company** can be of three types:

- **successful** in progress towards the implementation of a technologically new or improved product or process;
- **interrupted** prior to the implementation of a technologically new or improved product and process, due to the project encountering difficulties, the idea and know-how are sold or otherwise ceded to another company, or the market has changed;
- **ongoing**, that is, the work continues, but the result has not yet been achieved. Such activities may be conducted to lead to an intended new or improved product or process, or may have more vague goals, as in the case of basic or general technology research. new or significantly improved products introduced on the market, new or significantly improved services or methods of their production (transfer), also already introduced on the market, new or significantly improved production processes introduced into practice. (Instructions for filling out the federal state statistical observation form No. 4-innovation "Information on the innovative activity of the organization",

In domestic statistical practice, in fact, innovatively active organizations include organizations that had, in the reporting period (annual, not three-year) costs for innovations, regardless of their size, stage of the innovation process and the level of its completion. (see: Economic description of the problem of electronic data processing in the form No. 4-innovation.)

An organization that has completed innovations in the last three years indicates the degree of participation of its own or third-party organizations in the development of these innovations (technologically new or significantly improved products, services or methods of their production (transfer), technologically new or significantly improved production methods, including transfer methods product). At the same time, in the current statistical observation, the following classification is applied (^ extent of participation: innovations were developed: mainly by other organizations; this organization together with other organizations; basically, this organization. (Instructions for filling out the form of federal state statistical observation No. 4-innovation " Information about the

innovative activity of the organization ", approved by the decree of the State Statistics Committee of Russia from 22.07.

Under the development of innovations, mainly by other (third-party) organizations, we mean the implementation for a given organization under a contract of research and development by scientific organizations, universities, etc., with the possible minimum participation of this organization, which is limited mainly by the adaptation of developments to specific conditions, or the acquisition of new technologies (technical advances) through technological exchange (patent and non-patent licenses). The development of innovation by an organization in conjunction with other organizations involves the implementation of the innovation process, to a large extent, both by the organization itself and by third-party collaborators.

In the development of innovations, mainly by the organization itself, minimal participation, mainly of a consultative nature, of individual organizations and individuals is possible. The reasons for the lack of innovation in the organization over the past three years may be:

- no need for innovation due to earlier innovations;
- lack of market demand;
- other factors hindering innovation.

(Instructions for filling out the federal state statistical observation form No. 4-innovation "Information on the innovative activity of the organization", approved by the decree of the State Statistics Committee of Russia dated July 22, 2002 No. 156.)

CCI innovative firm Is a firm that has introduced technologically new or significantly improved products, processes, or combinations of products and processes during the reporting period. It is a firm with successful innovation activities during this period. Within this category, it is interesting to single out firms that have only "passive" CCI innovations, that is, those that innovate exclusively through borrowed technology used in new machines and equipment. In addition, it is recommended to include in the category of innovative firms only those firms founded during the reporting period that, at their founding, introduced a CCI innovation new to their current market, or introduced a CCI innovation later in the reporting period.

A firm that interrupted the CCI innovation activity is not included in the number of innovative ones, as well as a firm that, at the end of the period under review, continues the innovative work begun by the CCI, which has not yet been completed. An innovative firm has many characteristics that can be grouped into two main skill categories:

- **strategic skills:** long term vision; the ability to detect and even anticipate market trends; willingness and ability to collect, process and assimilate technological and economic information;

- **organization skills:** taste for risk and the ability to take risks; internal cooperation between different functional units and external cooperation with researchers, consultants, customers and suppliers; engaging the entire firm in the change process and investing in human resources.

(Green Paper of the European Commission - European Commission (1996), Green Paper on Innovation, Bulletin of the European Union, Supplement 5/95, Luxembourg.)

In theory, all firms that have emerged and during the period under review have implemented new products or processes. In practice, it is recommended that the number of CCIs of innovative firms include:

- firms that already existed at the beginning of the period under review and implemented during this period products or processes that are technologically new (or improved) for the given firm:

- firms that emerged during the period under review and:
 - at their founding carried out products or processes that are technologically new (or improved) for the functioning market of the firm;
 - after their founding, they have already carried out during this period products or processes that are technologically new (or improved) for the given company.

Definition of Chamber of Commerce and Industry of Innovative Companies From a policy perspective, innovation performance indicators are perhaps the most important innovation survey results. But they are also the most problematic. The simplest indicator is the number of innovative firms. This indicator is obtained by recalculating the number of firms that have carried out effective CCI innovation activities over the past three years. This includes firms that were active at the beginning of the period and which, during the reporting period, introduced CCI innovations that are new (or improved) for them, and firms that began their activities during this period and introduced TYPE innovations that became new (or improved) for the market. these firms, or firms that, after their formation, introduced CCI innovations that are new (or improved) for them. Firms,

At the same time, in order to obtain complete data on the total costs of innovation, it is recommended to keep a separate record of firms involved in innovation activities, but not innovating (either due to the closure of an innovation project, or as a result of an increase in the duration of the project). The

characteristics of this group of firms may differ from those of non-innovative firms.

A comment... There is a certain contradiction in the practice of domestic statistics of innovations. On the one hand, organizations that have implemented (completed) innovations in the last three years are declared to be innovatively active organizations, and on the other hand, all organizations that have shown the presence of costs for innovations in the reporting period are classified as innovatively active organizations. In our opinion, it is advisable to determine the innovativeness of organizations using two indicators: 1) innovative organizations - organizations that have implemented (completed) innovations in the last three years, and 2) innovatively active organizations - organizations that carried out in the reporting period (three years, a year) innovative activity, regardless of the degree of its completion (the criterion for referring to this type of organization is the presence of innovation costs in the reporting period). Also, it should be borne in mind that the reporting period in the Fractal Manual is three years. Therefore, for international comparability, the indicators characterizing innovative organizations should cover a three-year period of the organization's activity (and not mainly a year, as now the containment or premature completion of specific innovative projects. These factors are classified as follows. Economic factors:

- lack of own funds,
- lack of financial support from the state,
- low effective demand for new products,
- high cost of innovations,
- high economic risk,
- long payback periods of innovations, production factors:
- low innovation potential of the organization,
- lack of qualified personnel,
- lack of information about new technologies,
- lack of information about sales markets,
- insensitivity of organizations to innovations,
- lack of opportunities for cooperation with other enterprises and scientific organizations.

Other factors:

- low demand from consumers for innovative products (services),
- insufficient legislative and regulatory
- documents regulating and stimulating innovation,
- uncertainty of the timing of the innovation process,

- underdevelopment of the innovation infrastructure (intermediary information, legal, banking, other services),
- underdevelopment of the technology market.

The listed factors hindering innovation, slowing down the innovation processes in the organization (over the past three years) are assessed depending on the importance for the organization of one reason or another: insignificant or insignificant; significant; main or decisive. Also very important is information on the number of innovative projects for which these factors served as a real obstacle to their implementation over the past three years. Shows the number of innovative projects that were in connection with this:

- seriously detained;
- were started, but stopped at some intermediate stage (stopped);
- have not even been started.

(Instructions for filling out the federal state statistical observation form No. 4-innovation "Information on the innovative activity of the organization", approved by the decree of the State Statistics Committee of Russia dated July 22, 2002 No. 156.)

Constraints to innovation

Due to the action of factors hindering the development of innovation, innovation activity may not start or lead to the expected results. The list is subject to change according to national requirements.

Constraints to innovation:

Economic forces:

- excessive risk;
- too high costs;
- insufficient funding;
- too long an innovation payback period.

Internal factors:

- insufficiently high innovation potential (R&D, industrial designs, etc.);
- lack of qualified personnel;
- insufficient technological information;
- insufficient market information;
- the difficulty of controlling the cost of innovation;
- lack of in-house flexibility;
- unavailability of third-party services;
- lack of opportunities for cooperation.

Other factors:

- lack of technological capabilities;

- infrastructure deficiencies;
- lack of need for innovation (use of existing ones);
- insecurity of property rights;
- legislation, norms and standards, taxation;
- consumers immune to new types of products and new processes

**Joint projects for the implementation of research and development,
other types of innovative activities**

One of the tasks of statistical observation of innovations is to determine the presence of cooperation ties, cooperation of an organization that carries out innovative activities in the field of research and development, and other types of it with other organizations for the reporting year, regardless of whether the organization acts as a customer or executor of relevant works and services.

Data is collected on the number of joint research and development projects, including those on state scientific and technical, federal targeted and international programs that stimulate research and innovation. At the same time, joint projects are distributed in accordance with **with the location of cooperation partners**: Russia; the countries of the CIS and Eastern Europe; countries - members of the European Union; USA and Canada; Japan; other countries. Joint projects are also categorized by types of partners:

- enterprises as part of a group (association, partnership, society), which includes the organization;
- consumers of products (works, services);
- suppliers of equipment, materials, components, software;
- competitors in the industry;
- consulting, information firms;
- scientific organizations;
- universities or other higher education institutions.

It is accepted to evaluate the level of activity of participation in joint research projects of cooperation partners on the following scale:

- there is no cooperation;
- low level of cooperation;
- high level of cooperation.

(Instructions for filling out the federal state statistical observation form No. 4-innovation "Information on the innovative activity of the organization", approved by the decree of the State Statistics Committee of Russia dated July 22, 2002 No. 156.)

Oslo Guide recommends that innovation surveys include scientific and technical cooperation with partners and a group of countries. **Product life cycle**- the period during which the production of this product was carried out until the moment of its replacement, that is, before the start of the release of a new or significantly modified product (both innovative and non-innovative). The life cycle is indicated in full years. For example, if the product was produced for two years and three months, then three years are indicated, and if the product was produced for five or seven months, then one year is indicated. If the products have not undergone changes or modifications, the total duration from the beginning of its release to the reporting period is indicated. (Instructions for filling out the federal state statistical observation form No. 4-innovation "Information on the innovative activity of the organization", approved by the decree of the State Statistics Committee of Russia dated July 22, 2002 No. 156.)

Innovation cycle- a periodically repeating process of sequential creation of innovative products - from identifying a new need and generating an idea (concept) to its practical implementation (implementation) and marketing in the market within a single economic entity or within a set of organizations united by stable economic ties, and constantly reproducing innovative infrastructure. (Appendix to the draft "Fundamentals of the policy of the Russian Federation in the development of the national innovation system for the period up to 2010 and beyond.")

Life cycle of innovation- the period of time until commercialization or the expected payback period. The sales figures for technologically new and technologically advanced types of products are directly influenced by the life cycle of the product. They tend to be higher for short lifecycle product groups where innovation occurs most frequently. Innovations of this kind are not always the most significant or technologically advanced. A high proportion of sales of technologically new or significantly changed products does not necessarily indicate a high level of innovation. To account for the impact of the product life cycle on this indicator, companies must provide data on the average life cycle of their products. This data can be used to weight percentages.

A comment. The definition of the innovation cycle in the appendix to the draft "Fundamentals of the policy of the Russian Federation in the development of the national innovation system for the period up to 2010 and beyond" needs to be improved, since it is highly doubtful to attribute the process of constant reproduction of the innovation infrastructure to the innovation cycle. Besides, is the concept of "innovation cycle" necessary at all? In the interpretation of the

appendix to the project "Fundamentals ...", this definition essentially refers to innovation at the organizational level

Total costs (current and capital) for technological innovation includes the costs of the development and implementation of technologically new or significantly improved products, services or methods of their production (transfer), technologically new or significantly improved production methods), both performed by the organization's own resources, and the cost of payment for work, services of third parties ... (Instructions for filling out the federal state statistical observation form No. 4-innovation "Information on the innovative activity of the organization", approved by the decree of the State Statistics Committee of Russia dated July 22, 2002 No. 156.)

Total costs at the CCI, innovation activities include current and capital costs incurred in the course of innovation.

It is recommended that data be collected according to the classification of the total costs of CCI innovation by type of innovation activity and by type of cost (current costs of innovation or costs of innovation related to fixed assets). Information on the cost of CCI innovation by source of funds is also very important, as financial issues arise very often in policymaking.

Classification by type of cost

The costs of CCI innovative activities should be, if possible, broken down into current and capital. This is especially important if the data needs to be compared with data on investments in intangible assets (intangible assets), with which the cost of innovation is sometimes confused. **Current expenses**, carried out mainly at the expense of the cost of products (works, services), include the costs of remuneration of workers involved in the development and implementation of technological innovations, social contributions, as well as other costs not related to capital costs, such as costs for the purchase of raw materials, materials, equipment, etc., necessary to ensure innovative activities carried out by the organization during the year. (Instructions for filling out the federal state statistical observation form No. 4-innovation "Information on the innovative activity of the organization", approved by the decree of the State Statistics Committee of Russia dated July 22, 2002 No. 156.)

Current innovation costs consist of labor and other operating costs.

Labor costs include annual salary payments and all other payments, for example, bonuses, payment of severance pay, contributions to the pension fund and other social benefits, payroll taxes, etc. Labor costs for personnel not involved in the CCI innovation activity (protection , technical staff) should be excluded from this article and treated with other recurring costs.

Other operating costs include non-capital purchases of materials, services and equipment for the implementation of the Chamber of Commerce and Industry of the company's innovative activities for the reporting year.

Capital investments (long-term investments) represent the annual costs of creating, increasing the size, as well as the acquisition of non-current assets of durable use (over one year), not intended for sale, carried out in connection with the development and implementation of technological innovations. They consist of the costs of acquiring structures, land plots, natural resources, machinery, equipment, and other fixed assets required for innovation. (Instructions for filling out the federal state statistical observation form No. 4-innovation "Information on the innovative activity of the organization", approved by the decree of the State Statistics Committee of Russia dated July 22, 2002 No. 156.)

Capital expenditure on innovation- the annual gross costs of fixed assets used for the TYPE of the company's innovative activities. They should be fully reflected in the period in which they were incurred and should not be depreciated. This includes the costs of land and buildings, tools and equipment and, according to the revised System of National Accounts (SNA), computer software, which are part of the NML costs and are considered a capital investment. The Land and Buildings item includes the acquisition of land and buildings for CCI innovation activities, including major improvements, modifications and renovations.

Article "Tools and Equipment" includes basic tools and equipment purchased for use in the firm's technological innovation activities. The article "Computer software", according to the modified SNA, includes software, program descriptions and accompanying materials for use in the TYPE of the firm's innovation activities. The costs of CCI innovations include investments and tangible assets: capital expenditures for R&D, the acquisition of new machinery and equipment related to technological innovations

Types of innovation:

- research and development of new products, services and methods of their production (transfer), new production processes;
- purchase of machinery and equipment related to technological innovation;
- acquisition of new technologies,
of which the rights to patents, licenses to use inventions, industrial designs, utility models;
- purchase of software;
- production design, other types of production preparation for the release of new products, the introduction of new services or methods of their production

(transfer);

- education and training of personnel related to innovation;
- marketing research;
- other costs of technological innovation.

(Instructions for filling out the federal state statistical observation form No. 4-innovation "Information on the innovative activity of the organization", approved by the decree of the State Statistics Committee of Russia dated July 22, 2002 No. 156.)

The following list **types of innovation** is not exhaustive. Its purpose is to explain when certain activities should be included in a CCI innovation.

Acquisition and formation of relevant knowledge, new to the company:

- research and experimental development;
- acquisition of non-material technologies and know-how;
- acquisition of materialized technologies.

Other forms of preparation for production:

- instrumental preparation and organization of production;
- production design;
- other capital acquisitions;
- start-up of production.

Marketing of new or improved products.

Of all the above types of work, only R&D and the acquisition of machines containing new technologies are, by definition, CCI an innovative activity. Others may be so, depending on the goals of their implementation. ***Design:***

- production;
- artistic.

Personnel training is a type of CCI of innovation activity when it is necessary for the implementation of a technologically new or improved product or process.

Marketing is a type of CCI of innovation activity when it is necessary for the implementation of a technologically new or improved product (or, less often, a new process).

Software - development, acquisition, adaptation and use of software are part of the Chamber of Commerce and Industry of Innovation.

Classification by type of innovation

The description of cost items that should be included under different categories in the cost of technological innovation is based on the definitions of the types of CCI of innovation activity.

The following classification should be considered as a general guideline for industry and services. For the service sector, not all elements are necessary, so they should be excluded.

To facilitate comparison with R&D costs **It is recommended to collect information on the classification by the type of CCI innovation activity by the total cost of CCI innovation (current and capital costs). The following classification can be used:**

- R&D costs;
- the cost of acquiring technologies that are not embodied in a specific product and know-how;
- the cost of acquiring technologies embodied in a specific product;
- costs of equipping with equipment, industrial engineering, industrial design, production start-up, including other items of costs for pilot plants and prototypes not included in the R&D;
- the cost of conducting trainings related to the Chamber of Commerce and Industry of Innovation;
- marketing costs of technologically new or improved products

By funding sources the costs of technological innovation are distributed:

- own funds of the organization, including from profit, at the expense of the cost of products (works, services);
- funds, respectively, of the federal budget and the budgets of the subjects of the federation and local budgets received by the organization directly or under contracts with the customer;
- off-budget funds (fund for stabilizing the economy, fund for regional development, sectoral and inter-sectoral off-budget funds for research and development work, Russian fund for technological development, conversion fund, road fund, etc.);
- foreign investment;
- other sources.

(Instructions for filling out the federal state statistical observation form No. 4-innovation "Information on the innovative activity of the organization", approved by decree Goskomstat of Russia No. 156 dated 22.07.2002.)

Funding source classification

It is very important to know about how innovations are financed by CCIs. This can be important for assessing the role of public policy and internationalization in the innovation process. The following classification is proposed according to the source of funding:

- own funds;

- funds from affiliated companies (subsidiaries or associates);
- funds from other organizations;
- public funds (loans, grants, etc.);
- funds from supranational and international organizations (for example, the EU);
- other sources

Goals and performance of innovation Questions on the goals of innovation organizations are not provided for in the toolkit of the current national federal state statistical observation. A certain idea of the possible goals of an organization's innovation activity can be drawn from the assessment of the degree of influence of the results of innovation activity on its development (see "Results of innovation activity".)

Innovation goals

The innovative focus of a firm must be consistent with its economic goals (manufactured products and market sector) and the importance of goals that can be achieved in the course of the innovation process. This applies to all innovative activities of the firm. There are usually several goals.

Economic goals of innovation:

- substitution of types of products removed from production;
- expansion of the range:
 - the main type of product;
 - other types of products;
- development of products that are safe for the environment;
- maintaining market share;
- increasing market share;
- entering new markets:
 - foreign;
 - new local target groups;
- increased production flexibility;
- reduction of production costs due to:
 - reducing labor costs;
 - reducing material consumption;
 - reducing the energy intensity of production;
 - reducing the level of marriage;
 - reducing the cost of product design;
 - reducing the time needed to develop new products;
- improving product quality;
- improving working conditions;

- reduction of harm to the environment

Results of innovation activity:

- replacement of obsolete products (services) removed from production;
- improving the quality of products, services;
- expanding the range of products, types of services;
- preservation and expansion of traditional sales markets;
- creation of new sales markets in Russia and other countries;
- ensuring compliance with modern rules and standards;
- increasing the flexibility of production and the internal commercial process;
- growth in production capacity;
- reduction of wages, material costs, energy costs;
- reduction of environmental pollution;
- improvement of working conditions.

The listed main results of innovative activities carried out in the organization over the past three years are assessed according to the degree of their influence on the development of the organization:

- there was no impact;
- low impact;
- medium impact;
- high degree of impact.

(Instructions for filling out the federal state statistical observation form No. 4-innovation "Information on the innovative activity of the organization", approved by the decree of the State Statistics Committee of Russia dated July 22, 2002 No. 156.)

In domestic statistics, innovative products (services) are understood as products (services) that have been subject to varying degrees of technological change over the past three years (as a result of product and process innovations). In domestic practice, the total volume of shipped innovative products consists of the following volumes:

- products that have been reintroduced or have undergone significant technological changes over the past three years;
- products that have been improved over the past three years;
- other innovative products.

For shipped products, newly introduced (fundamentally new) or undergoing significant technological changes (over the past three years), the scope (use), performance characteristics, features, design, as well as the composition of the materials and components used are new or significantly different in comparison

with previously produced (in the world) products. The definition of this product corresponds to the concept of technologically new products in the composition of product innovations presented above.

Such products, as a rule, are based on fundamentally new technologies or on a combination of new ones with the use of existing technologies. Microprocessors and VCRs are examples of radical innovations (fundamentally new). The first portable cassette player to combine the existing principles of tape recorders and miniature in-ear loudspeakers was an innovation of the second type. In both cases, no finished product has been produced before. Shipped products that have been improved (over the past three years) include products that already exist (in the country, in the world), the parameters of which have been significantly improved or modified. The definition of this product corresponds to the concept of improved products as part of product innovations,

This definition suggests two options. A simple product can be improved (in terms of improving its quality, increasing the economic efficiency of production) by using higher-quality components or materials or improved technological processes (changes in the technological equipment or organization of the technological process). A complex product, consisting of a number of integrated technical subsystems, can be improved by making partial changes to one of these subsystems.

Other innovative products (shipped) is based on the introduction of new or significantly improved production methods, involving the use of new production equipment, new methods of organizing production, or a combination of these. As a rule, this applies to products already produced in the organization. The definition of this product is consistent with the concept of process innovation presented above. In addition, products based on borrowed best practices (non-patent licenses, know-how, etc.) fall into this category. (Instructions for filling out the federal state statistical observation form No. 4-innovation "Information on the innovative activity of the organization", approved by the decree of the State Statistics Committee of Russia dated July 22, 2002 No. 156.)

Scope of innovative services- the volume of technologically new or improved services that have undergone various kinds of technological changes over the past three years refers to services whose characteristics or methods of use are fundamentally new or significantly improved qualitatively or technologically. The scope of services of an innovative nature also includes services whose methods of production or transfer are new or significantly improved (meaning changes in equipment or organization of production that are necessary both for the production or transfer of new or significantly improved services,

and in order to increase the efficiency of production or transfer already existing services (works)). This is in line with the concept of technological innovation in the service sector formulated above.

Innovation results

Defining what constitutes an innovation raises many terminological difficulties. Most products, and of course the processes that create them, are complex systems. Changes, therefore, must be identified in relation to:

- properties and characteristics of the effectiveness of the product as a whole;
- changes in the components of the product that increase its effectiveness, including the nature of the services it provides. Subsystem changes of this kind can be very small in scale, but their cumulative impact can be significant and important from an analytical perspective.

Impact of innovation on the performance of organizations

Various indicators can be used to assess the impact of innovation on the performance of companies. For example:

- the share of sales attributable to new or improved types of products;
- the result of innovation;
- the impact of innovation on the use of factors of production.

Proportion of sales attributable to new or improved products

When collecting data on this indicator, firms that started operations during the reporting period should be accounted for separately, since all of their sales are for new products. For these companies, only those products are considered that are new to their market sector. Firms that have emerged as a result of mergers, divestitures and other types of reorganization should not be considered as re-emerging if similar activities were carried out in the past.

It is recommended to consider the percentage of sales attributable to:

- technologically new types of products commercialized over the past three years;
- technologically advanced products commercialized in the past three years;
- types of products that are not technologically modified or subject only to product differentiation, produced using improved production methods over the past three years;
- types of products that have not been technologically changed or are subject only to product differentiation, produced using unchanged production methods over the past three years.

Sales of technologically new and technologically advanced products can be further subdivided into:

- sales attributable to product types that are new or technologically advanced for a given market segment;
- sales attributable to types of products that are new or technologically improved only for this firm.

Innovation results

To provide a complete picture of the impact of innovation on the efficiency of the companies must be obtained general information about the company at the beginning and end of the three-year

period:

- sales (year t and $t - 2$);
- export (year t and $t - 2$);
- personnel (year t and $t - 2$);
- current profit (year t and $t - 2$).

Impact of CCI innovations on the use of production factors

One of the results of innovation, especially in manufacturing industries, is a change in the production function, that is, a change in the use of factors of production.

It is proposed to include in the survey how CCI innovations have influenced the use of factors of production, such as the use of human labor, the consumption of materials and energy, and the use of fixed capital.

This information can be obtained by simply asking firms whether there have been any changes in the use of factors of production as a result of the introduction of CCI innovations. It is also possible to quantify these changes, at least roughly.

This indicator provides a rough idea of the impact of CCI innovation. It can refer to innovations introduced over the past three years, or it can provide a broader view of the impact of innovation on a firm's performance.

Average cost savings for process innovation

They provide an assessment of the significance of various sources of information used by the organization to form its own innovation policy, prepare solutions related to the development and implementation of innovations. Sources of information for innovation can be classified as follows:

- Internal sources of the organization:
 - research units;
 - production units;

- marketing divisions;
- other.
- Organizations as part of a group (association, partnership, society), which includes the organization.
 - Suppliers of equipment, materials, components, software.
 - Industry competitors.
 - Consumers of products (works, services).
 - Consulting, information firms.
 - Scientific organizations:
 - academic profile;
 - industry profile.
 - Universities or other higher education institutions.
 - Modern rules, standards.
 - Description of inventions, patents, official publications of the patent service, etc.
 - Conferences, seminars, symposia.
 - Scientific and technical literature.
 - Exhibitions, fairs, other advertising media.

The listed sources of information are assessed depending on the importance of a particular source for the organization:

- not used;
- insignificant or insignificant;
- significant;
- main or decisive.

Internal sources of the organization may include: its top management (director), research, production, marketing departments of the organization, its own highly qualified specialists, etc. The sources of information also include cooperation with users of the organization's products, cooperation with subcontractors (suppliers of materials, equipment, components), cooperation with consulting and information services, cooperation with other organizations, government contracts, innovation support programs, cooperation with scientific organizations, information on the activities of competitors, scientific or technical literature, patents. (Instructions for filling out the federal state statistical observation form No.4-innovation "Information about the innovative activity of the organization", approved by the decree of the State Statistics Committee of Russia dated July 22, 2002 No. 156.)

Sources of information on innovation (drivers of innovation)

The list is subject to change according to national requirements. Internal sources of the firm or business group:

- own R&D;
- marketing;
- production;
- other internal sources.

External market / commercial sources:

- competitors;
- the acquisition of technologies embodied in any product or process;
- acquiring technologies that are not embodied in any product or process;
- customers or consumers;
- consulting firms;
- suppliers of equipment, materials, components and software.

Educational / research institutions:

- higher educational institutions;
- government research institutes;
- private research organizations.

Publicly available information:

- disclosure of the essence of patented inventions;
- professional conferences, meetings and magazines;
- fairs and exhibitions.

Some of the listed sources can be divided into local and foreign sources.

The exchange of technologies for the purposes of statistical observation means the transfer (acquisition) of scientific and technical knowledge, experience and information for the purpose of applying technological processes, producing products and providing scientific and technical and related services to the exchange on commercial terms determined by an agreement (agreement, contract) concluded between a resident and a non-resident of the Russian Federation.

For information **about export and import** technologies within the framework of the current statistical observation according to the form No. 1-license "Information on the commercial exchange of technologies with foreign countries (partners)" information is collected on payments (receipts) under agreements (agreements, contracts) for intangible transactions (intangible assets) related to exchange (trade) of knowledge, information and services of a technical nature that meet the following conditions:

- international orientation of the transaction (a transaction between a resident and a non-resident);

- the commercial nature of the transaction (availability of payments / receipts);
- the object of the agreement should be technology, the provision of technical services and related services.

Data on the export and import of technologies and services of a technical nature are recorded under the categories of commercial transactions. This takes into account all commercial transactions, respectively, for the export and import of technologies and services of a technical nature, concluded between **resident and non-resident**... Commercial transactions on the exchange of technologies can be formalized both in the form of separate agreements and in the form of a package of agreements. The package includes several categories of commercial agreements within the framework of an agreement (contract) or a set of agreements.

Categories of commercial agreements on technology exchange covers agreements including:

- 1) patent for invention;
- 2) non-patent invention;
- 3) patent license;
- 4) know-how;
- 5) trademark;
- 6) industrial model;
- 7) engineering services;

8) research and development (for export - research carried out by Russian specialists abroad and financed from foreign sources (export of technologies); for import - research carried out in Russia by foreign specialists and financed from Russian sources (import of technology));

- 9) others.

Information to be collected and recorded **on the area of destination and cost characteristics of the object of the agreement, the duration of the agreement, partner countries by agreement**... (Instructions for filling out the federal state statistical observation form No. 1-license "Information on the commercial exchange of technologies with foreign countries (partners)."

Acquisition and transfer by the organization of new technologies (technical achievements), software

In this case, the total number of acquired and transferred by the organization is determined new technologies (technical achievements), software during the reporting year, including acquired and transferred technologies outside the Russian Federation.

The number of acquired (transferred) technologies is distributed according to the forms of acquisition (transfer):

• rights to patents, licenses to use inventions, industrial designs, utility models:

- research and development results;
- know-how, technology transfer agreements;
- purchase (sale) equipment;
- purposeful hiring (transition) to work of qualified specialists;
- other.

(Instructions for filling out the form Federal State Statistical Surveillance No. 4-innovation "Information on the innovative activity of the organization", approved by the decree of the State Statistics Committee of Russia dated July 22, 2002 No. 156.)

Diffusion of innovation is defined as a way of promoting innovation through market and non-market channels from the moment of its first application elsewhere and in other countries and regions, in other industries, in other markets and in other companies.

Technology Acquisition / Distribution Questions

Questions on the balance of payments by technology are included in innovation surveys in two versions. On the most ambitious approach, questions are asked about the costs and benefits of patents, licenses, know-how, technical support, and other technology diffusion. According to the second approach, the collection of information about finances is not necessary, there is enough data on whether the firm acquired or sold technology in the domestic or foreign markets.

This methodology is described in the OECD TWR Handbook. But the possibility of collecting detailed information on TBR in innovation surveys is questionable. This may require a separate survey. The second approach is more suitable for innovative surveys.

To gain an understanding of the relationship between technology acquisition, innovation and technology sale **it is recommended to include in innovation surveys the question of whether a company acquired or sold technology in the domestic or foreign markets (if possible, indicating a specific region)**. Further, the information should be detailed by the type of transaction (patents, non-patented inventions, licenses, know-how, trade marks, provision of technological services, consulting services, acquisition / transfer of technologies through the purchase / sale of an organization or equipment, mobility of quali-

fied personnel, etc.).) Patenting and other methods of protecting inventions, scientific and technical developments of the organization

It is accepted to assess the importance of various methods of protecting inventions, scientific and technical developments related to innovations developed by the organization and used over the past three years. Moreover, the following protection methods are used:

- patenting inventions, industrial designs, utility models;
- registration of a trademark;
- copyright protection;
- ensuring trade secrets, secrecy, know-how;
- the complexity of product design;
- providing an advantage in terms of development and release
- products over competitors.

The listed methods of protecting inventions, scientific and technical achievements for product and process innovations are evaluated depending on their significance:

- not used;
- negligible or insignificant;
- significant;
- main or decisive.

One of the indicators related to innovation activity is the number of applications for patents for inventions, patents for industrial designs, certificates for utility models filed by the organization (by the author - an employee of the organization or by the employer or their successor). official registration of computer programs, databases, topologies of integrated circuits. (Instructions for filling out the federal state statistical observation form No. 4-innovation "Information on the innovative activity of the organization", approved by the State Statistics Committee of Russia dated 22.07.2 (102 No. 156.)

Questions on patents and applicability of innovations

Patent data (patent applications and granted patents) are not indicators of innovation performance. They are indicators of inventive activity that does not always lead to innovation. But for a deeper understanding of the essence of innovation processes, questions on patenting are needed. The most common, of course, are questions about the number of patent applications filed by a firm and the number of patent certificates obtained (these data are available in various national and international databases). Questions on patenting were included and some surveys on innovation or R&D.

The respondent firms can be asked to rate the effectiveness of various methods of maintaining and increasing the competitiveness of innovations presented over the past three years. These methods may include:

- patenting;
- registration of an industrial design;
- secrecy;
- the complexity of the industrial image;
- advantage over competitors in terms of development time

General (external to organizations) conditions for innovation

Innovation policy Of the Russian Federation, an integral part of state policy is a type of activity at the federal, regional and municipal levels for the direct and indirect regulation of the implementation of the basic guidelines of the state in relation to the status, principles, goals, objectives, priorities, resources, mechanisms and results of innovation. (Appendix to the draft "Fundamentals of the policy of the Russian Federation in the development of the national innovation system for the period up to 2010 and beyond.") -

State innovation policy- determination by the state authorities of the Russian Federation and state authorities of the constituent entities of the Russian Federation of the goals of the innovation strategy and support mechanisms for priority programs and projects. (The concept of the innovation policy of the Russian Federation for 1998-2000, approved by the decree of the Government of the Russian Federation of July 24, 1998, No. 832.)

State innovation policy- part of the state socio-economic policy aimed at improving state regulation, developing and stimulating innovation. (Federal Law "On innovation activity and state innovation policy" adopted by the State Duma on December 1, 1999, approved by the Federation Council on December 23, 1999 and rejected by the President of the Russian Federation on January 3, 2000).

Policy of the Russian Federation in the field of development of the national innovation system is a part of state policy and is focused on the formation of a new economy of the country based on knowledge, developing competitive science-intensive production based on the achievements of science, technology and technology. This policy is carried out taking into account the whole range of reforms that create a macroeconomic environment favorable for innovation activity and encourage entrepreneurial initiative. (The draft "Fundamentals of the policy of the Russian Federation in the development of the national innovation system for the period until 2010 and beyond" (prepared by the interdepartmental working group of the Security Council of the Russian Federation on problematic

issues of the formation of the national innovation system of the Russian Federation using materials submitted by federal executive bodies subjects of the Russian Federation, academies of sciences with state status, and organizations of the scientific and technical complex) - order of 12.01.2004 No. MP-pr-82, p. 2.)

Innovation policy only recently emerged as a fusion of scientific, technical and industrial policy. Non-emergence signals a growing recognition that knowledge in all its forms plays a critical role in economic progress, that innovation is at the heart of this “knowledge-based economy,” and that innovation is more complex and systemic than previously thought. Systems approaches to innovation shift the focus of politics towards interaction between institutions, shifting attention to the processes of interaction both in the creation of knowledge and its dissemination and application. The term “national innovation system” was specifically coined for this complex of institutions and knowledge flows.

There are three main categories **factors** primarily related to innovation. They relate to businesses, scientific and technical institutions and the transfer and absorption of technology, knowledge and skills. In addition, the range of opportunities for innovation is influenced by a fourth set of factors, such as the environment of institutions, regulation, macroeconomic environment, and other conditions that exist independently of any aspect of innovation.

These four large categories (areas of) innovation factors can be presented as a map showing areas where policy leverage could be applied to commercial innovation or areas to be taken into account when formulating policy initiatives. In this way, the policy area for the national innovation system can be summarized. While the focus of the literature has been on national systems, it is clear that in many cases this approach is applicable at the local and transnational levels as well.

Schematically, these four main areas **areas of innovation policy** are characterized as follows:

- more *broad framework conditions* national institutional and structural factors (eg legal, economic, financial, educational) determine the rules and range of opportunities for innovation;
- *scientific and technical basis* - accumulated knowledge and scientific and technical institutions that enable commercial innovation by providing technology training and scientific knowledge;
- *transmission factors* - these are the factors that strongly influence on the effectiveness of connections, flows of information and skills

and successful learning, essential to commercial innovation; these are factors or people whose nature is largely determined by the social and cultural characteristics of the population;

- *innovative dynamo* - the most central the area for commercial innovation encompasses dynamic factors within a firm or in its immediate environment that most directly affect its innovativeness

A comment. The main remark to the definition set forth in the appendix to the draft "Fundamentals of the policy of the Russian Federation in the development of the national innovation system for the period up to 2010 and beyond" is that innovation policy should include not only regulation of the implementation of state directives, but also, being part of government policy, to shape these attitudes. As for the definition given in the Concept of the Innovation Policy of the Russian Federation for 1998-2000, the mechanism for implementing the goals of innovation policy, in our opinion, should apply not only to priority programs and projects, but also to form a favorable environment for all types of innovation.

National innovation system (NIS)- a developing set of interacting institutions of management and regulation of innovation activity, economic entities of the state and non-state sectors of the economy, organizations of the educational and financial-credit spheres, carrying out innovative activities on the basis of effectively operating institutional mechanisms. (Appendix to the draft "Fundamentals of the policy of the Russian Federation in the development of the national innovation system for the period up to 2010 and beyond.")

The national innovation system is a unity:

- an innovative complex - organizations and teams directly involved in the creation and development of innovations, as well as the necessary research and production infrastructure;
- forms and results of innovation;
- subjects of management, regulation and promotion of innovation - a set of authorities, institutions, centers of technological forecasting, state structures and non-state institutions of the innovation sphere.

(Appendix to the draft "Fundamentals of the policy of the Russian Federation in the development of the national innovation system for the period up to 2010 and beyond.")

National innovation system Is a developing set of interacting subjects of the state and non-state sectors of the economy, carrying out innovative activities on the basis of the formed economic and institutional mechanisms. The national innovation system unites the efforts of the state, organizations of scientific, technical and educational spheres, the entrepreneurial sector of the economy, the

financial and credit sphere, state structures and non-state institutions of the innovation sphere in the interests of accelerated implementation of the results of intellectual activity in the market of high-tech science-intensive products based on the formation between the subjects of innovative activity equal partnership. represented by federal executive bodies, constituent entities of the Russian Federation, academies of sciences with state status, and organizations of the scientific and technical complex) - order of 12.01.2004 No. MP-pr-82, p. 3.) represented by federal executive bodies, constituent entities of the Russian Federation, academies of sciences with state status, and organizations of the scientific and technical complex) - order of 12.01.2004 No. MP-pr-82, p. 3.)

At a higher level - with a systematic vision of innovation - the importance of transferring and disseminating ideas, skills, knowledge, information and signals of many kinds. The channels and networks through which this information circulates are socially, politically and culturally rooted and highly dependent on and constrained by institutional frameworks. The National Innovation System (NIS) approach views innovative firms in the context of external institutions, public policies, competitors, suppliers, consumers, value systems, and social and cultural practices that affect their performance.

A comment. In our opinion, more correct is the definition proposed in the draft "Fundamentals of the policy of the Russian Federation in the field of development national innovation system for the period up to 2010 and beyond "

Innovative infrastructure (infrastructure of the national innovation system) - a set of conditions (fundamental science, education system), organizations, industrial and other public facilities that provide opportunities for successful innovation. (Appendix to the draft "Fundamentals of the policy of the Russian Federation in the development of the national innovation system for the period up to 2010 and beyond.")

Innovative infrastructure Is a collection of objects innovative activities and interrelationships between them, which produce new knowledge and innovations, transform them into new products and services, ensure their distribution and consumption in market conditions. The innovation infrastructure is the link between the results of scientific research and the market, the state and the business sector of the economy. The infrastructure of the national innovation system is based on technology transfer centers, innovation and technology centers, technoparks and high-tech territories, funds for supporting research and development work, funds for start-up and venture funding, centers for training specialized personnel (personnel) and information support for innovation activities, etc.

Innovative infrastructure - organizations promoting implementation of innovative activities (innovation and technology centers, technology incubators, technology parks, educational and business centers and other specialized organizations. (Concept of the innovation policy of the Russian Federation for 1998-2000, approved by the Government of the Russian Federation of July 24, 1998 No. 832.)

Innovative infrastructure - a set of organizations, providing services for the creation, development in production and (or) practical application of new or improved products, new or improved technological process. (Federal Law "On Innovation Activity and on State Innovation Policy" adopted by the State Duma on December 1, 1999, approved by the Federation Council on December 23, 1999 and rejected by the President of the Russian Federation on January 3, 2000)

A comment. A more correct definition given in the draft "Fundamentals of the policy of the Russian Federation in the development of national innovation system for the period up to 2010 and beyond". Although, in our opinion, objects producing new knowledge and innovations should not be included in the innovation infrastructure

Innovative program (innovative project) - interstate, federal, interregional, regional, sectoral levels - justified by the interests of the market a set of activities, coordinated in terms of resources, performers and timing of their implementation, ensuring the effective development, creation and development of an innovative product. (Appendix to the draft "Fundamentals of the policy of the Russian Federation in the development of the national innovation system for the period up to 2010 and beyond.")